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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Helmuth Holler

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JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004

EXAMINER

MA, JAMESON Q

ART UNIT

PAPER NUMBER

4153

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/554,700	Applicant(s) HOLLER ET AL.	
	Examiner JAMESON Q. MA	Art Unit 4153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060425</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figures 1a, 1b, 3a and 3b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see P11/L8-10 and P11/L14-16). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-13 are objected to because of the following informalities:

Claim 1 recites the limitation "the component" in line 2 and in lines 4-5, but refers to multiple "components" in line 1. Suggested correction is to replace "components" with "a component" in line 1.

Additionally, it is unclear if "the component" recited in lines 4-5 is the same as one of the components recited in line 1, or if it is the component of formed after the step recited in line 2 having at least the area to be tested completely tested completely wetted with a foam forming material.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5, 7, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 5 and 11, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 5 recites the broad recitation "irradiation", and the claim also recites "infrared irradiation" which is the narrower statement of the range/limitation. Also, in the present instance, claim 11 recites the broad recitation "washing", and the claim also recites "preferably with water" which is the narrower statement of the range/limitation.

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Regarding claim 5, the phrase "in particular" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claim 5, recitation "from that side of the component which is located opposite of the area to be tested" renders the claim indefinite. When testing for leaking, the passage through the component forming the leak is inherently starting on one side and ending on the other side of the component. Therefore, since the area to be tested includes both sides, it is not clear from what other side is the component irradiated.

Regarding claim 7, recitation "the oppositely arranged sides (...) are wetted with the testing liquid" renders the claim indefinite, because it is unclear whether both sides are wetted in addition to the wetting step in claim 1, or if the wetting step of claim 1 comprises wetting both sides.

Regarding claim 11, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-4, 6, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admission of Prior Art (see P3/L12-P4/L12 of instant specification) in view of Hirota et al. (US 3,664,965).

Regarding claim 1, the Applicant's Admission of Prior Art (AAPA) discloses a method for leak-testing components having cavities (P3/L12-14), wherein on at least one side of the component to be tested, at least the area to be tested is completely wetted with a testing liquid (P3/L14-16), characterized in that the component is subjected to a temperature increase (P3/L16) and in that subsequently the component's area to be tested is checked for a bubble formation of the testing liquid (see P3/L16-20).

While the AAPA disclose that water is used as a testing liquid and that the leaks are detected by observing of bubble formation (P3/L14-20), the reference does not explicitly disclose the testing liquid being foam-forming.

Hirota '965 teaches a method of detecting gas leaks by using of a foaming liquid such as soapy water to a vessel (C1/L21-23).

The AAPA and Hirota '965 are analogous because both references are directed to detecting leaks by checking for bubble formation.

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the testing liquid used in the AAPA with soapy water taught by Hirota '965, because doing so would have made the bubbles formed in the method used in the AAPA last longer and remain visible for longer periods of time to the test operator, therefore making the detection of leaks easier and more accurate.

Regarding claims 2-4, 6, and 7-8, modified AAPA discloses all of the claim limitations as set forth above. Additionally, modified AAPA discloses:

- a testing method, characterized in that at least the component's area to be tested is cooled before being wetted with the testing liquid (see P4/L3-12: when the component is removed from the heated bath, it is naturally cooled before subsequent immersions are performed).
- a testing method, characterized in that the cooling is effected to -30°C at the most (see P4/L3-12: it is inherent that the cooling is effected to -30°C at the most because if

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cooling were effected to temperature lower than -30°C, the testing liquid (water) would be in solid form).

- a testing method, characterized in that at least the component's area to be tested is heated after having been wetted with the testing liquid (P3/L15-16).
- a testing method, characterized in that the oppositely arranged sides at least of the component's area to be tested are wetted with the testing liquid (P3/L19-21: leaks are detected by observing bubbles rising in the liquid container, it is inherent that the entire component is submerged in order to determine if a leak is present on the entire structure)
- a testing method, characterized in that the sites exhibiting bubble formation are marked (P3/L21-23).

Regarding claim 6, not specifically taught is a method, characterized in that the heating is effected to 80°C at the most. However, the routine experimental modification of this prior art done in order to ascertain the optimum properties of disclosed leak detection fails to render the applicant's claims patentable in the absence of unexpected results. See *In re Aller*, 105 USPQ 233 and MPEP 2144.05. At the time of invention a person having ordinary skill in the art would have found it obvious to optimize the temperature to which to heat the component in order to balance such properties as cost and possible damage to components due to heating at excessive temperatures. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. See *In re Boesch and Slaney*, 205 USPQ 215.

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9. Claims 1, 4, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (US 3,664,965).

Regarding claims 1 and 4, Hirota '965 discloses:

- a method for leak-testing components having cavities (see C1/L12-15), wherein on at least one side of the component to be tested, at least the area to be tested is completely wetted with a foam-forming testing liquid (see C2/L64-66), and in that subsequently the component's area to be tested is checked for a bubble formation of the testing liquid (see C2/L66-71).
- a method, characterized in that at least the component's area to be tested is wetted with the testing liquid (see C2/L64-66).

Additionally, Hirota '965 discloses that pressurized air is introduced into the testing structure to increase the gas pressure within the structure after the detecting liquid is applied to the structure (see C2/L68-70). Hirota '965 does not explicitly disclose the component being subjected to a temperature increase to effect said gas pressure increase within the structure. Hirota '965 also does not disclose the component being subjected to a temperature increase after the test area is wetted.

However, to one skilled in the art at the time of invention, it would have obvious to try to subject the closed component to a temperature increase after wetting it with the detecting liquid in order to increase gas pressure within the component, since doing so would amount to nothing more than choosing from a finite number of identified, predictable solutions of increasing gas pressure within a closed component, with a reasonable expectation of success.

Regarding claims 8-10, modified Hirota '965 discloses all of the claim limitations as set forth above. Hirota '965 also discloses:

- a method, characterized in that the sites exhibiting bubble formation are marked (see C3/L1-3).
- a method, characterized in that the testing liquid is applied by brushing to at least the component's area to be tested (see C2/L65).
- a method, characterized in that the testing liquid is applied by spraying to at least the component's area to be tested (see C2/L65).

Regarding claim 6, not specifically taught is a method, characterized in that the heating is effected to 80°C at the most. However, the routine experimental modification of this prior art done in order to ascertain the optimum properties of disclosed leak detection fails to render the applicant's claims patentable in the absence of unexpected results. See *In re Aller*, 105 USPQ 233 and MPEP 2144.05. At the time of invention a person having ordinary skill in the art would have found it obvious to optimize the temperature to which to heat the component in order to balance such properties as cost and possible damage to components due to heating at excessive temperatures. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. See *In re Boesch and Slaney*, 205 USPQ 215.

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10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (US 3,664,965), as applied to claims 1, 4, 6, and 8-10 above, and further in view of Goldfarb et al. (US 4,553,435),

Regarding claim 5, modified Hirota '965 discloses all of the claim limitations as set forth above.

Modified Hirota '965 does not explicitly disclose a method, characterized in that at least the component's area to be tested is heated by irradiation, in particular infrared irradiation.

Goldfarb discloses a method of providing heat to a component by means of infrared light (31).

Modified Hirota '965 and Goldfarb are analogous because both references are directed toward providing heat to a component.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the infrared irradiation as the heat source in the method of modified Hirota '965, in further view of Goldfarb, since doing so would amount to nothing more than choosing from a finite number of identified, predictable solutions of providing heat by infrared irradiation, with a reasonable expectation of success.

11. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (US 3,664,965), as applied to claims 1, 4, 6, and 8-10 above, and further in view of Hirota et al. (US 4,113,673).

Regarding claims 11-13, modified Hirota '965, discloses all of the claim limitations as set forth above. Modified Hirota '965 does not explicitly disclose a method:

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- characterized in that after said testing, the testing liquid is removed by washing, preferably with water.
- characterized in that the washing process is effected under pressure.
- characterized in that the washing process is mechanically assisted.

Hirota '673 discloses a method for leak-testing a component by applying a bubble forming substance to a test area (C5/L3-5). Hirota '673 further discloses removing the test liquid by washing with water at a pressure of 2kg/cm^2 (C5/L65-67). In order to pressurize the water, this process must have inherently been mechanically assisted.

Modified Hirota '965 and Hirota '673 are analogous because both references are directed to a method of leak-detection comprising the application of a bubble forming liquid to a test area.

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the washing methods of modified Hirota '965, as taught by Hirota '673, in order to prevent the test liquid from interfering with normal operation/use of the component.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMESON Q. MA whose telephone number is (571)270-7063. The examiner can normally be reached on M-R 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571)272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JM

August 1, 2008

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 4153